



National Sea Grant College Program

Science serving America's coasts

What does Sea Grant do for the nation?

The National Sea Grant College Program engages the nation's top universities in conducting scientific research, education, and extension projects designed to better understand and use our ocean, coastal, and Great Lakes resources. Sea Grant focuses on three major areas:

- Conducting research to tackle priority problems identified by coastal residents, state and local governments, and NOAA and other federal agencies.
- Recruiting and training undergraduate and graduate students and employing senior researchers who form a national brain trust for dealing with coastal economic and environmental challenges.
- Making scientific results available and understandable to resource managers, business people, teachers, and coastal residents through K-12 education, communication, and extension projects.



Research



Education



Extension

The 30 Sea Grant programs, located in coastal and Great Lakes states and Puerto Rico, serve as the core of a dynamic, national network of over 200 participating institutions involving more than 3,000 scientists, engineers, educators, students, and outreach experts. This network works on a variety of topics, such as aquaculture, aquatic nuisance species, coastal hazards, fisheries and seafood safety, coastal community development, and water quality.

Since its establishment by the Congress in 1966, Sea Grant has developed long-standing working relationships with a broad spectrum of constituents and stakeholders in every coastal state. The combination of a university-based research program with strong education and extension components enables Sea Grant to identify emerging coastal issues and apply the best scientific minds to solve these problems. And because Sea Grant is non-regulatory and focuses on better understanding the science of coastal resources, it serves as an "honest broker" among a wide range of constituents.

By law, Sea Grant must be responsive to local as well as regional and national concerns. The program requires that every \$2 of federal funds be matched by \$1 of non-federal funds that are usually provided by state or local governments. In recent years, the match provided by Sea Grant programs has considerably exceeded this requirement, thus providing outstanding leverage for the federal funds awarded.

Accomplishments:

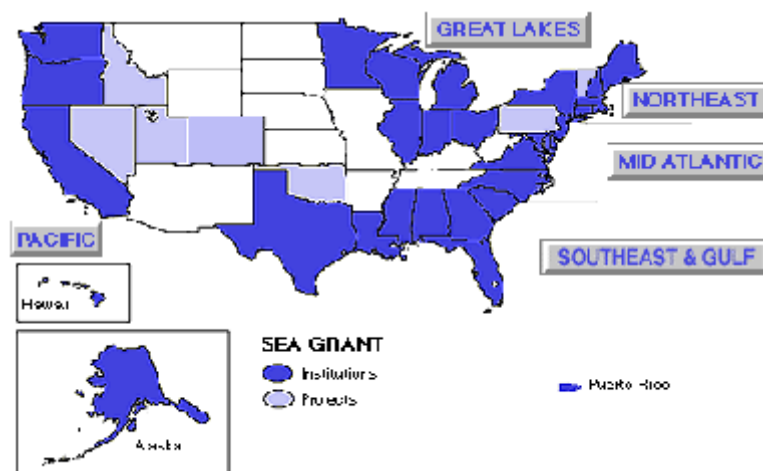
Sea Grant is organized into nine "theme teams" which develop long-term programmatic objectives to address high priority, local problems in a national context. Some major accomplishments in each theme include:

Aquaculture: Sea Grant research and extension efforts have spurred the growth and development of fish farming in the United States. **Payoffs:** *The growing of hybrid striped bass in ponds has expanded in just 10 years from a small demonstration project to an industry that produces 10 million pounds of fish valued at \$25 million annually. Sea Grant also developed a sterile oyster that can be grown year-round and that now comprises one-third of the \$86 million U.S. oyster market.*

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Coastal Hazards: Sea Grant researchers have created the first coastal erosion-related photomosaic maps in the nation. These maps will be used to chart the coastal erosion process on the Hawaiian Island of Oahu. In the past 50 years, coastal erosion has claimed almost one-quarter of the island's beaches, threatening its \$10 billion a year tourism industry, which supports almost a third of all island jobs. **Payoffs:** *By comparing digitally enhanced aerial photographs of Hawai'i taken from 1949 to 1997, the researchers will be able to determine not only where erosion hazard areas exist now but also where they are likely to exist in the future, property by property.*

Coastal Communities and Economies: Sea Grant is bringing together regional planning agencies from Illinois, Indiana, Michigan, and Wisconsin to identify the issues that affect the lower Lake Michigan basin and the lake itself. Those four states share the same ecosystem, the southern Lake Michigan basin area, which includes the Gary-Chicago-Milwaukee corridor. As these cities grow and develop, the decisions they make independently will have lasting effects on the ecologies of all four states. **Payoffs:** *Sea Grant is helping improve the use of science-based information by the states' planning agencies, which should result in a more efficient use of resources and in better coordination of interstate planning.*



Education and Human Resources: Sea Grant's "COAST: Operation Pathfinder" targets K-12 teachers to increase their understanding of oceanography and to improve their teaching techniques. Pathfinder institutes provide a dynamic mix of marine science field work and hands-on science activities in two-week summer workshops held in six regions of the country. **Payoffs:** *During the past eight years, more than 700 teachers have received this training. They then train other teachers through required in-service programs that have reached an additional 14,000 teachers. Over a five-year period, it is estimated that all these teachers have the potential of educating 5.5 million K-12 students about the world's oceans and coastlines.*

Fisheries: Sea Grant research has shown that visually modifying salmon gillnets and adjusting fishing schedules can reduce entanglements of seabirds. **Payoffs:** *These findings, coupled with an observer program coordinated by Sea Grant, prevented the closure of the Puget Sound sockeye salmon fishery, saving hundreds of jobs and millions of dollars in the region's economy.*

Ecosystems and Habitats: Sea Grant has been instrumental in the development of strategies for wetlands restoration on all four coasts. **Payoffs:** *Wetland loss mitigation strategies have led to the creation and restoration of valuable wetlands while allowing coastal development valued in excess of \$100 million.*

Ocean/Coastal Technology and Marine Biotechnology: Sea Grant organized the first systematic research effort in the United States to develop new drugs from marine organisms. **Payoffs:** *Sea Grant researchers have discovered and described more than 1,000 compounds that may be vitally important as new anticancer, anti-inflammatory, and antibiotic agents.*

Seafood Science and Safety: To aid the seafood industry in meeting educational and training needs called for by new FDA regulations, Sea Grant spearheaded the formation of the “Seafood HACCP Alliance,” an intergovernmental agency partnership with industry and academia. ***Payoffs: The Alliance’s programs reached over 5,000 U.S. processing plants, and 6,000 importers and international suppliers with training on new seafood handling and processing techniques. In addition, it has been estimated that the program has prevented 20,000 to 60,000 seafood-related illnesses a year, thereby saving as much as \$115 million annually.***

Urban Coast: Sea Grant studies of the White Point sewage outfall in Southern California assessed the effect of sewage effluents on nearby coastal ecosystems. ***Payoffs: After being provided with this effluent information, Orange County officials were able to receive secondary treatment waivers under EPA’s stringent water quality requirements, saving taxpayers as much as \$50 million a year over a 30-year period that would have been spent on additional treatment facilities.***

What’s Next for Sea Grant?

Sea Grant will continue to play a strong leadership role in support of sustainable coastal communities, ranging from small fishing villages to major urban centers, and the development and wise use of our Nation’s ocean, coastal, and Great Lakes natural resources. Through its state programs and its national initiatives, Sea Grant will help the nation address such critical issues as protecting water quality and coastal habitat, developing coastal economies and communities, protecting and enhancing coastal and Great Lakes fisheries, responding to coastal hazards, ensuring seafood safety, and maximizing the benefits from newly developed coastal technologies. Particular emphasis will be placed on enhancing three major areas: environmentally sound aquaculture; environmental marine biotechnology and marine natural products; and advanced technologies for marine forecasting.

Sea Grant will build on its efforts to make its outreach infrastructure of education, extension, and communications available to all the components of NOAA. This past year, the Great Lakes Sea Grant programs and OAR’s Great Lakes Environmental Research Laboratory hired a joint extension agent. In addition, South Carolina Sea Grant and the National Severe Storms Laboratory (NSSL) are collaborating on a demonstration of the NSSL three-dimensional rainfall model in the Carolinas, which will improve flood forecasting in those hurricane-prone states.

Budget and Staff:

NOAA’s National Sea Grant College Program, with a headquarters staff of 22, has over \$100 million under management (\$58.16 million in NOAA appropriated funds, \$10.28M in pass-through funds, and \$33.0M in matching state funds) and supports approximately 3,000 full and part-time university employees in 30 programs nationwide.



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